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10/035,357	12/28/2001	David W. Sanso		2300

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EXAMINER

BARBER, THERESE

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/035,357

Applicant(s)

SANSO, DAVID W.

Examiner

Therese Barber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 December 2001.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,9,10,13 and 15 is/are rejected.
- 7) ☒ Claim(s) 5,6,8,11,12,14 and 16-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 4, 7, 10, 13, 17 and 18 are objected to because of the following informalities:

Regarding claim 1, the limitations of “a first angular relation” and “a second angular relation” is vague and indefinite. One could interpret that the angular relation of the optical cable implies that the angle of the end face of the optical cable can be a zero angle, an acute angle, a right angle, an obtuse angle or a straight angle.

Regarding claims 4, 7, 10, 13, 17 and 18, the limitations of “first acute angle” and “second acute angle” are vague. One could interpret that the angles of the end portions of the illumination conducting fibers need to be angled/tilted anywhere from 0 to 90 degrees. Therefore, the angles of the end portion can be in a range from 0 degree (a straight line) to almost 90 degrees because an exactly 90 degree angle is a right angle.

Regarding claim 10, line 4, the phrase “said central” should be inserted before the phrase “optical fiber image bundle”.

Regarding claim 10, line 9, the phrase “said central optical fiber” should be inserted before the phrase “image bundle”.

Regarding claim 13, line 3, the phrase “said central optical fiber” should be inserted before the phrase “image bundle”.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim rejected under 35 U.S.C. 102(b) as being anticipated by Nudelman et al. (USPN 5,200,819).

4. Regarding claims 1-3, Nudelman discloses a cable for endoscope viewing apparatus (col. 10, lines 28-61) wherein the cable is comprised of an image viewing cable for viewing an objective (72); a distal image forming cable for forming an image of the objective (78); image transmission means for transmitting an image from the image forming means to the image viewing cable (col. 10, lines 32-35 and 37-39); illumination light conducting fibers for conducting illumination light to illuminate a viewing objective (74, 76); the first illumination light conducting fiber is in an angular relation to the image forming end axis (74; fig. 5); the second illumination light conducting fiber is in an angular relation to the image forming end axis (76; fig. 5); wherein the first illumination light conducting fiber lies in a common plane with the image forming end axis (fig. 5); and wherein the image transmission means include a fiber optic image bundle having a central image bundle axis (72; fig. 5).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 7, 9, 10, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nudelman and Wach et al. (USPN 6,416,234 B1).

7. Regarding claims 4, 7, and 9, Nudelman discloses a cable for endoscope viewing apparatus (col. 10, lines 28-61) wherein the cable is comprised of an image viewing cable for viewing an image of the objective (72); a distal image forming cable for forming an image of the objective (78); image transmission means for transmitting an image from the image forming means to the image viewing cable (col. 10, lines 32-35 and 37-39); a plurality of illumination light conducting fibers for conducting illumination light to illuminate a viewing objective (74, 76); the first illumination light conducting fiber is in an angular relation to the image forming end axis (74; fig. 5); the second illumination light conducting fiber is in an angular relation to the image forming end axis (76; fig. 5); wherein the first illumination light conducting fiber lies in a common plane with the image forming end axis (fig. 5); and wherein the image transmission means include a fiber optic image bundle having a central image bundle axis (72; fig. 5).

However, Nudelman fails to disclose that the illumination light conducting fibers of the endoscopic optical cable forms an acute image with the image forming end face of the optical cable.

Wach discloses optical fiber probes that can manipulated and controlled the light emergence and collection patterns of light propagating through the optical fibers, in order to improve optical sensitivity by reliably steering off-axis the probes' delivery pattern and field of view (col. 14, lines 1-29 and col. 22, lines 24-41). In particular, Wach discloses that a probe is typically comprised of standard, flat-face fibers in parallel have decreased optical efficiency due to the similarities in shape of the end faces of the optical fibers (col. 3, line 38 to col. 4, line 44; col. 5, lines 25-46). In fig. 2, Wach discloses an optical fiber that has a planar, angular face. Furthermore, Wach disclose that it is possible to angle a planar end face in order to refract a portion of the propagating rays while reflecting the rest of the propagating rays, which are functions for the light ray angle relative to the geometry of the surfaced encountered (col. 23, lines 58-67; fig. 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made the illumination light conducting cables utilized in the endoscope apparatus of Nudelman could be modified such that the end faces of the optical cables have a planar, angular face as disclosed by Wach. Accordingly, the motivation is the resultant structure will have increased optical sensitivity due to the manipulation and control of the light emergence and collection patterns of light propagating through the optical fibers, in order to improve optical sensitivity by reliably steering off-axis the probes' delivery pattern and field of view.

8. Regarding claims 10, 13, and 15, Nudelman discloses a cable for endoscope viewing apparatus (col. 10, lines 28-61) wherein the cable includes a distal image forming end (78); a central optical fiber image bundle (72) wherein the distal image bundle axis is close to the image forming end (fig. 5); the illumination light conducting optical fibers (74, 76) are adjacent to the

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central optical fiber image bundle (fig. 5); wherein the first illumination light conducting optical fiber lies in a common plane with the central optical fiber image bundle distal end portion (fig. 5); wherein the second illumination light conducting optical fiber (76) lies in common plane with the central optical fiber image bundle (fig. 5); wherein the first illumination light conducting optical fiber end face is generally normal to the first illumination light conducting optical fiber distal end portion (74; fig. 5); and wherein the second illumination light conducting optical fiber end face is generally normal to the second illumination conducting optical fiber axis distal end portion (76; fig. 5).

However, Nudelman fails to disclose that the illumination light conducting fibers of the endoscopic optical cable forms an acute image with the image forming end face of the optical cable.

Wach discloses optical fiber probes that can manipulated and controlled the light emergence and collection patterns of light propagating through the optical fibers, in order to improve optical sensitivity by reliably steering off-axis the probes' delivery pattern and field of view (col. 14, lines 1-29 and col. 22, lines 24-41). In particular, Wach discloses that a probe is typically comprised of standard, flat-face fibers in parallel have decreased optical efficiency due to the similarities in shape of the end faces of the optical fibers (col. 3, line 38 to col. 4, line 44; col. 5, lines 25-46). In fig. 2, Wach discloses an optical fiber that has a planar, angular face. Furthermore, Wach disclose that it is possible to angle a planar end face in order to refract a portion of the propagating rays while reflecting the rest of the propagating rays, which are functions for the light ray angle relative to the geometry of the surfaced encountered (col. 23, lines 58-67; fig. 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made the illumination light conducting cables utilized in the endoscope apparatus of Nudelman could be modified such that the end faces of the optical cables have a planar, angular face as disclosed by Wach. Accordingly, the motivation is the resultant structure will have increased optical sensitivity due to the manipulation and control of the light emergence and collection patterns of light propagating through the optical fibers, in order to improve optical sensitivity by reliably steering off-axis the probes' delivery pattern and field of view.

***Allowable Subject Matter***

9. Claims 5, 6, 8, 11, 12, 14, and 16-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

10. Regarding claims 5, 6, 8, 11, 12, and 17-20, the claims would be allowable over the prior art of record for at least the reasons that the prior art fails to teach or to reasonably suggest an optical cable to be utilized in an endoscope apparatus wherein the end faces of the illumination light conducting fibers will have one acute angle at 10 degrees at one end face and the second acute angle is 20 degrees at the second end face in conjunction with the image viewing cable end portion and the distal image-forming cable end portion, as set forth in the claimed combination.

11. Regarding claims 14 and 16, the claims would be allowable over the prior art of record for at least the reasons that the prior art fails to teach or to reasonably suggest an optical cable to be utilized in an endoscope apparatus wherein the end faces of the illumination light conducting fibers will have one acute angle at 10 degrees at one end face and the second acute angle is 20



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degrees at the second end face in conjunction with the central optical fiber image bundle and the distal image-forming cable end portion, as set forth in the claimed combination.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (703) 306-0205. The examiner can normally be reached on Monday to Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4857 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

tb   
May 1, 2003

  
DAVID V. BRUCE  
PRIMARY EXAMINER